

REMARKS

In view of the above amendments and the following remarks, reconsideration and further examination are respectfully requested.

I. Amendments to the Specification and Abstract

The specification and abstract have been reviewed and revised to improve their English grammar. The amendments to the specification and abstract have been incorporated into a substitute specification and abstract. Attached are two versions of the substitute specification and abstract, a marked-up version showing the revisions, as well as a clean version. No new matter has been added.

II. Amendments to the Claims

Claims 2, 3, 10 and 11 have been cancelled without prejudice or disclaimer of the subject matter contained therein.

Further, independent claims 1, 9 and 17-21 have been amended to clarify features of the invention recited therein and to further distinguish the present invention from the references relied upon in the rejections discussed below.

It is also noted that claims 1, 4-9 and 12-21 have been amended to make a number of editorial revisions thereto. These editorial revisions have been made to place the claims in better U.S. form. Further, these editorial revisions have not been made to narrow the scope of protection of the claims, or to address issues related to patentability, and therefore, these amendments should not be construed as limiting the scope of equivalents of the claimed features offered by the Doctrine of Equivalents.

III. 35 U.S.C. § 101 Rejection

Claims 20 and 21 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 20 and 21 have been amended to recite that the program is recorded on a non-transitory computer-readable recording medium and causes a computer to execute a specific method. As a result, claims 20 and 21 now recite statutory subject matter and withdrawal of this rejection is respectfully requested.

IV. 35 U.S.C. § 102 and § 103 Rejections

Claims 1, 2, 6, 8 and 17-21 were rejected under 35 U.S.C. § 102(b) as being anticipated by Puri (Signal Processing Image Communication 2). Further, claims 3-5, 7 and 9-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over various combinations of Puri and Hosono (U.S. 5,796,438). These rejections are believed clearly inapplicable to amended independent claims 1, 9 and 17-21 and the claims that depend therefrom for the following reasons.

Amended independent claim 1 recites a decoding device including a decoding unit operable to decode an encoded image signal obtained by encoding image frames of an image signal and by encoding additional information for creating an interpolation frame for interpolating the image frames based on a first motion vector that is a motion vector between the image frames, so as to output decoded image frames of the image signal and decoded additional information. In addition, claim 1 recites that the decoding device includes a motion vector detection unit operable to detect a second motion vector, which is a motion vector between (i) the image frames of the encoded image signal decoded based on the decoded additional information output from the decoding unit and (ii) the decoded image frames output from the

decoding unit, and includes an interpolation frame creation unit operable to create an interpolation frame, considering the detected second motion vector as the first motion vector, such that the created interpolation frame is created based on the second motion vector, the decoded image frames output from the decoding unit, and the decoded additional information output from the decoding unit. Further, claim 1 recites that the interpolation frame creation unit obtains an interpolation motion vector based on a ratio between a distance in terms of time between the decoded image frames and a distance in terms of time to an interpolation position of the interpolation frame for interpolating the image frames based on the first motion vector, and creates the interpolation frame based on the interpolation motion vector and the decoded image frames, wherein the additional information includes (i) an interpolation method for the interpolation frame with respect to the image frames, (ii) a motion detection method for detecting the first motion vector, and (iii) profile information specifying a combination of information, and wherein the additional information further includes at least one of (i) residual information of the interpolation frame and an image frame corresponding to the interpolation frame, and (ii) a vector difference between a motion vector of the interpolation frame detected with respect to the image frames and a motion vector of the interpolation frame derived based on the first motion vector with respect to the image frames.

In view of the above-described structure required by claim 1, the Applicants submit that, according to the claimed invention, (1) when a size of a “subtraction signal” is larger than a predetermined threshold, the present invention encodes an additional information (or decodes encoded additional information) including (A) an interpolation method for the interpolation frame with respect to the image frames, and (B) a motion detection method for detecting the first motion vector, and (2) when the size of the “subtraction signal” is smaller or equal to the

predetermined threshold, the present invention encodes an additional information (or decodes encoded additional information) including (A) the interpolation method for the interpolation frame with respect to the image frames, (B) the motion detection method for detecting the first motion vector, (C) residual information of the interpolation frame and an image frame corresponding to the interpolation frame, and (D) vector difference between a motion vector of the interpolation frame detected with respect to the image frames and a motion vector of the interpolation frame derived based on the first motion vector with respect to the image frames.

Puri and Hosono, or any combination thereof, fail to disclose or suggest the above-mentioned distinguishing features and the result of the structure, required by amended independent claim 1.

Rather, Puri merely teaches that the additional information includes at least one of an interpolation method and residual information (see page 131, right col., lines 1-3; and Fig. 2 F1).

Thus, in view of the above, it is clear that Puri merely teaches that the additional information could include the interpolation method or the residual information, but fails to disclose or suggest that that the interpolation frame creation unit obtains an interpolation motion vector based on a ratio between a distance in terms of time between the decoded image frames and a distance in terms of time to an interpolation position of the interpolation frame for interpolating the image frames based on the first motion vector, and creates the interpolation frame based on the interpolation motion vector and the decoded image frames, wherein the additional information includes (i) an interpolation method for the interpolation frame with respect to the image frames, (ii) a motion detection method for detecting the first motion vector, and (iii) profile information specifying a combination of information, and wherein the additional information further includes at least one of (i) residual information of the interpolation frame and

an image frame corresponding to the interpolation frame, and (ii) a vector difference between a motion vector of the interpolation frame detected with respect to the image frames and a motion vector of the interpolation frame derived based on the first motion vector with respect to the image frames, as recited in claim 1.

In other words, simply requiring the additional information to include one of the interpolation method and the residual information, as described by Puri, cannot provide the result of the structure required by claim 1, such that (1) when a size of a “subtraction signal” is larger than a predetermined threshold, the present invention encodes an additional information (or decodes encoded additional information) including (A) an interpolation method for the interpolation frame with respect to the image frames, and (B) a motion detection method for detecting the first motion vector, and (2) when the size of the “subtraction signal” is smaller or equal to the predetermined threshold, the present invention encodes an additional information (or decodes encoded additional information) including (A) the interpolation method for the interpolation frame with respect to the image frames, (B) the motion detection method for detecting the first motion vector, (C) residual information of the interpolation frame and an image frame corresponding to the interpolation frame, and (D) vector difference between a motion vector of the interpolation frame detected with respect to the image frames and a motion vector of the interpolation frame derived based on the first motion vector with respect to the image frames.

Furthermore, the Applicants note that the Hosono reference is silent in regards to the additional information, as described above and as recited in claim 1.

Therefore, because of the above-mentioned distinctions it is believed clear that claim 1 and claims 4-8 that depend therefrom would not have been obvious or result from any combination of Puri and Hosono.

Furthermore, there is no disclosure or suggestion in Puri and/or Hosono or elsewhere in the prior art of record which would have caused a person of ordinary skill in the art to modify Puri and/or Hosono to obtain the invention of independent claim 1. Accordingly, it is respectfully submitted that independent claim 1 and claims 4-8 that depend therefrom are clearly allowable over the prior art of record.

Amended independent claims 9, 17, 18, 19, 20 and 21 are directed to a device, a system, a circuit, a circuit, a program and a program, respectively and each recites features that correspond to the above-mentioned distinguishing features of independent claim 1. Thus, for the same reasons discussed above, it is respectfully submitted that independent claims 9 and 17-21 and claims 12-16 that dependent therefrom are allowable over the prior art of record.

V. Conclusion

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance and an early notification thereof is earnestly requested. The Examiner is invited to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,

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